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the "Journal Officiel" of the birth and deaths for 1913, 1914, 1915, 1916 and 1917 in the French departments not included in the zone of occupation and military occupations. These show a terrible increase of deaths over births. To give the whole picture of the serious effects of the war on the French civil population the figures are needed for the occupied territory. I can provide a few as a result of opportunities offered while at work in occupied France for the Commission for Relief in Belgium and North France.

In Lille, by far the largest city in occupied France, there was in the two years 1915 and 1916 a 47 per cent. decrease in births and a 45 per cent. increase in deaths as compared with pre-war ratios. This determination takes into account the difference in population of the city between the pre-war and the war years produced by an escape of one fourth of the city's inhabitants before the German forces occupied it, but it does not take into account the fact that this diminution of population was not effected by a simple random selection among the whole population (*i. e.*, by a proportionate lessening of all age groups and both sexes) but resulted largely from the removal for military service of almost all physically fit men of the age-group twenty to forty-five years. Part of the diminution also was caused by the emigration at the time of the invasion of entire families of the well-to-do class able to afford the expense of removal. This last group may perhaps be taken to be, on the whole, a particularly healthy group. In making, therefore, direct comparison of the mortality ratios for the two periods (war and pre-war) these special facts should be taken into account.

The increased percentage of deaths occurred especially in the age-groups 1 to 19 years, where it was 81 per cent. more in 1915-1916 than in 1913-1914, and 60 years and over, where it was 85 per cent. The principal immediate causes of the increased deaths were tuberculosis, brain hemorrhages and heart affections. The ultimate causes were of course certain war-produced conditions, especially the insufficient amount and variety of food and

the necessity for a renewed return to hard work in the fields by old men and women to make up for the absence of the able-bodied men.

Data with regard to Charleville, another French city in the occupied territory, but one in an agricultural rather than an industrial region—Lille is the center of North France's principal industrial region—show almost identical conditions. And I believe from my personal observations during 1915 and 1916 over the whole of the occupied territory that the death-ratios in these two cities are a fair sample of those for the whole of the occupied region. The occupation extended, of course, for a much longer period than merely 1915 and 1916. It extended from late in 1914 until late in 1918. Undoubtedly these ratios of lessened birth-rate and increased death-rate in the occupied territory of France for 1915-1916 are not greater, but probably because of the increase of exhaustion and difficulties with food, fuel, clothing, medical service and supplies, less than those for 1917 and 1918.

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#### INSTINCTIVE BEHAVIOR IN THE WHITE RAT

In confirmation of Mr. Griffith's observation of a possible case of instinctive behavior in the white rat reported in SCIENCE for August 15, 1919, I wish to add a somewhat similar observation which I made a few months ago.

Upon placing a few handfuls of fresh dandelions into a cage of some twenty white rats of various ages which had been reared in the laboratory for several generations, much to my surprise I found the rats at once ran away from the greens and gathered in one corner of the cage and behaved in a thoroughly frightened manner. At first I could not account for this strange behavior, for hitherto the rats had fed with avidity on fresh dandelions and seized the plants as soon as they were placed in reach. On further thought, I recalled that I had gathered the dandelions on this occasion in an old basket which had recently been used for bringing a

live cat into the laboratory and which had probably imparted an odor of cat to the greens.

I did not watch the rats very persistently, but the next day I noted that their behavior was perfectly normal and that the greens had been entirely eaten. It may be said with certainty that these animals which were so terrified had never in their experience been near a cat.

At the same time that I was working with white rats I had to use some rabbits and had occasion to handle some rats immediately after handling the rabbits. The rats did not respond in any peculiar way in the presence of the odor of rabbits, and as this was just as strange an odor as that of cat, it can hardly be assumed that this reaction of fear in the presence of the odor of cat was due simply to the novelty of the stimulus.

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#### AN EARLIER SNOW EFFECT

TO THE EDITOR OF SCIENCE: In your issue of August 29, Professor Woodman, University of Maine, describes an unusual snow phenomenon, and he states that it would be interesting to know if others have observed anything like it in other localities. It may therefore be worth while to call attention to a similar phenomenon described by Thoreau in his "Journal," Vol. XIII., pages 24-26:

I see, in the Pleasant Meadow field near the pond, some little masses of snow, such as I noticed yesterday in the open land by the railroad causeway at the Cut. I could not account for them then, for I did not go to them, but thought they might be the remainders of drifts which had been blown away, leaving little perpendicular masses six inches or a foot higher than the surrounding snow in the midst of the fields. Now I detect the cause. These (which I see to-day) are the remains of snowballs which the wind of yesterday rolled up in the moist snow. The morning was mild, and the snow accordingly soft and moist yet light, but in the middle of the day a strong northwest wind arose, and before night it became quite hard to bear.

These masses which I examined in the Pleasant Meadow field were generally six or eight inches high—though they must have wasted and settled

considerably—and a little longer than high, presenting a more or less fluted appearance externally. They were hollow cylinders about two inches in diameter within, like muffs. Here were a dozen within two rods square, and I saw them in three or four localities miles apart, in almost any place exposed to the sweep of the northwest wind. There was plainly to be seen the furrow in the snow produced when they were rolled up, in the form of a very narrow pyramid, commencing perhaps two inches wide, and in the course of ten feet (sometimes of four or five only) becoming six or eight inches wide, when the mass was too heavy to be moved further. The snow had thus been rolled up even, like a carpet. This occurred on perfectly level ground and also where the ground rose gently to the southeast. The ground was not laid bare. That wind must have rolled up masses thus till they were a foot in diameter. It is certain, then, that a sudden strong wind when the snow is moist but light (it had fallen the afternoon previous) will catch and roll it up as a boy rolls up his ball. These white balls are seen far off over the hills.

This description is accompanied by a drawing, so characteristic of Thoreau, showing the cylindrical ball and its path in the snow.

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#### QUOTATIONS

##### THE ARMY AND SCIENCE

THE university has not yet been accustomed to think of the army as an institution in which scholarship flourishes. Nor has the army been interested in the work of the university. Each went its way in the belief that its task was so different from the other that the benefit to be derived from cooperation would be outweighed by the trouble involved. That this attitude has been completely changed is due more to the changes in fighting than to those in teaching. It was only a short while ago that such an expression as "the science of war" flattered the activity of generals and their armies. The infantry had to know how to shoot and the cavalry how to ride. Tactical problems, solved by the General Staff, consisted largely in the accurate reading of maps and the direction of marches